IJPHS:
International Journal of Psychology and Health Science
GREENATION PUBLISHER
+62 812 1046 7572 http://greenpub.org greenation.info@gmail.com
DOI: https://doi.org/10.38035/ijphs.v3i4

Factors Associated with Acute Respiratory Infections (ARI) Among Toddlers at PMB Ana Hasanah, Tangerang

Viedya Wildan[1], Hasta Sulistyaningrum[2], Yanasita Mafluha[3], Dhea Ayunanda[4], Tiara[5]
[1]Universitas Yarsi Pratama, Banten, Indonesia, viedya@yarsipratama.ac.id
[2]Universitas Yarsi Pratama, Banten, Indonesia, hasta@yarsipratama.ac.id
[3]Akademi Kebidanan Assyifa Tangerang, Banten, Indonesia, yana@yarsipratama.ac.id
[4]Universitas Yarsi Pratama, Banten, Indonesia, dhea@yarsipratama.ac.id
[5]Akademi Kebidanan Assyifa Tangerang, Banten, Indonesia, tiara467123@gmail.com

Corresponding Author: yana@yarsipratama.ac.id[3]

Abstract: The toddler period is a critical stage in human growth and development, as this phase is marked by rapid physical and cognitive progress. The most at-risk group is toddlers, with approximately 20–40% experiencing Acute Respiratory Infections (ARI). ARI is one of the leading causes of morbidity among toddlers. This study aimed to determine the factors associated with the incidence of ARI in toddlers. The research used an analytical design with a cross-sectional approach. A total of 36 respondents were selected using the Slovin formula. The research instrument was a questionnaire. Data were analyzed using univariate and bivariate analyses with the chi-square test. The results showed that the majority of toddlers experienced ARI (80.6%), respondents with low education accounted for 55.6%, those not exclusively breastfed 66.7%, with a history of low birth weight (LBW) 72.2%, incomplete immunization 52.8%, poor maternal knowledge 41.7%, and good knowledge 19.4% (7 respondents). Statistical tests showed significant associations between maternal education (p=0.021), exclusive breastfeeding (p=0.029), history of LBW (p=0.010), immunization status (p=0.030), and maternal knowledge (p=0.017) with ARI incidence in toddlers. It is concluded that there are significant relationships between maternal education, exclusive breastfeeding, history of LBW, immunization status, and maternal knowledge with ARI among toddlers. It is recommended to improve knowledge regarding ARI prevention through health education programs.

Keyword: ARI, Exclusive Breastfeeding, History Of Low Birth Weight (LBW), Immunization Status, And Knowledge

INTRODUCTION

Toddlers are children aged between 1–5 years. This period is a crucial stage in human growth and development, as growth and developmental processes occur rapidly (Akbar et al., 2020). The most at-risk group is toddlers, with approximately 20–40% experiencing Acute

Respiratory Infections (ARI). Indonesia is among the developing countries with the highest number of ARI cases.

Acute Respiratory Infection (ARI) is a disease caused by the entry of germs or microorganisms into the upper or lower respiratory tract. It is contagious and can cause a wide range of illnesses, from asymptomatic or mild infections to severe and fatal diseases, depending on the pathogen, environmental factors, and host condition (Yuditya & Mulyono, 2019). ARI is one of the most common illnesses among children and toddlers (Ministry of Health RI, 2017). ARI easily attacks the human body when the immune system decreases (Triola et al., 2022).

ARI remains one of the leading causes of morbidity and mortality from infectious diseases worldwide, with a mortality rate reaching 4.25 million deaths per year. According to the World Health Organization (WHO) (2020), there were 1,988 ARI cases among toddlers aged 1–5 years, accounting for 42.91% of total cases (Widianti, 2020). In 2023, the prevalence of ARI among toddlers in Indonesia was 34.2% (SKI, 2023), and in Banten Province it was 8.7% (SKI, 2023). According to Sandro (2023), ARI cases in Tangerang Regency reached 88,237 cases in 2021 and increased to 106,060 cases in 2022, showing a notable rise. In 2022, the distribution of ARI cases among toddlers in Tangerang Regency was as follows: Mauk (4,133 cases), Sepatan (4,310), Rajeg (4,211), Sindang Jaya (4,580), Paku Haji (3,789), and Cikupa (3,540) (Sandro, 2023).

The factors contributing to ARI are divided into two categories: intrinsic and extrinsic. Intrinsic factors include gender, age, nutritional status, immunization status, and history of low birth weight (LBW). Extrinsic factors include housing density, inadequate ventilation, exposure to smoke, maternal knowledge, maternal education, and maternal behavior (Sunarni, 2017).

Toddlers suffering from ARI can experience emotional distress that affects the entire family by disrupting family dynamics. Children with recurrent ARI may face school absences and emotional challenges, while parents may lose work time, bear economic burdens for healthcare, and experience stress and sleep deprivation (Eldridge, 2020). These conditions can have long-term impacts on the family's well-being. Therefore, ARI among toddlers remains a serious public health concern that requires effective intervention.

Preventive measures against ARI can be taken by parents through actions such as providing nutritious food, ensuring complete immunization to strengthen the child's immune system, maintaining personal and environmental hygiene, and preventing children from coming into contact with infected individuals (Angelina, 2022).

Based on a preliminary survey conducted at PMB Ana Hasanah, the number of ARI cases among toddlers was 88 cases in 2022, 91 cases in 2023, and 100 cases in 2024, showing a consistent annual increase.

Based on the above issues, it is evident that many toddlers still experience Acute Respiratory Infections (ARI). Therefore, this study is conducted under the title:

"Factors Associated with Acute Respiratory Infections (ARI) Among Toddlers at PMB Ana Hasanah, Tangerang."

METHOD

This study employed an analytical research design with a cross-sectional approach. The cross-sectional approach emphasizes the observation or measurement of independent and dependent variables at a single point in time (Nursalam, 2020). The research was conducted at PMB Ana Hasanah, located in Kampung Bayur, Tangerang Regency, Banten Province, from May to August 2025.

The variables in this study consisted of a dependent variable (incidence of ARI) and independent variables (maternal education, exclusive breastfeeding history, history of low

birth weight (LBW), immunization status, and maternal knowledge). The population included all mothers with toddlers visiting PMB Ana Hasanah, totaling 55 respondents. The sample size was 36 respondents, determined using the Slovin formula, and selected through purposive sampling based on inclusion and exclusion criteria.

The data source was primary data, obtained directly from respondents (Sugiyono, 2018). Data collection was carried out through interviews using a questionnaire that had been tested for validity and reliability.

Data processing included the following steps: editing, coding, entry, tabulating, and cleaning. Data analysis consisted of univariate analysis, which analyzes a single variable (Notoatmodjo, 2018), and bivariate analysis, which examines the relationship between two variables (Notoatmodjo, 2018). The chi-square test was used for statistical analysis, utilizing SPSS version 25 for Windows.

RESULT AND DISCUSSION

The results of this study were obtained from mothers with toddlers aged 1–5 years who visited PMB Ana Hasanah, Tangerang Regency, involving a total of 36 toddlers, as described below:

A. Univariate Analysis

1. Incidence of Acute Respiratory Infections (ARI)

Table 1. Frequency Distribution of Acute Respiratory Infection (ARI) Incidence

Incidence of ARI	Frequency (f)	Percentage (%)
No	7	19,4%
Yes	29	80,6%
Total	36	100%

Source: Primary Data, 2025

Based on Table 1, it was found that out of 36 respondents, 29 toddlers (80.6%) experienced Acute Respiratory Infections (ARI), while 7 toddlers (19.4%) did not experience ARI.

2. Maternal Education

Tabel 2. Frequency Distribution of Maternal Education

Maternal Education	**Frequency (f)**	**Percentage (%)**
Low (Elementary-Junior High School)	**20**	**55,6%**
High (Senior High School-Higher Education)	**16**	**44,4%**
Total	**36**	**100%**

Source: Primary Data, 2025

Based on Table 2, it was found that 20 respondents (55.6%) had low education levels, while 16 respondents (44.4%) had high education levels

3. Exclusive Breastfeeding History

Table 3. Frequency Distribution of Exclusive Breastfeeding History

Exclusive Breastfeeding History	Frequency (f)	Percentage (%)
Yes	12	33,3%
No	24	66,7%
Total	36	100%

Source: Primary Data, 2025

Based on Table 3, it was found that 24 respondents (66.7%) were not given exclusive breastfeeding, while 12 respondents (33.3%) were given exclusive breastfeeding.

4. Frequency Distribution of Low Bitrth Weight (LBW) History

Table 4. Table of Frequency Distribution of Low Birth Weight (LBW) History

LBW History	Frequency (f)	Percentage (%)
Yes	26	72,2%
No	10	27,8%
Total	36	100%

Source: Primary Data, 2025

Based on Table 4, it was found that respondents with a history of low birth weight (LBW) were 26 respondents (72.2%), while those without a history of LBW were 10 respondents (27.8%).

5. Immunization Status

Table 5. Frequency Distribution of Immunization Status

Immunization Status	Frequency (f)	Percentage (%)
Completed	17	47,2%
Not Completed	19	52,8%
Total	36	100%

Source: Primary Data, 2025

Based on Table 5, the results show that respondents who did not receive complete immunization were 19 respondents (52.8%), while those who received complete immunization were 17 respondents (47.2%).

6. Mother's Knowledge

Table 6. Frequency Distribution of Mother's Knowledge

Mother's Knowledge	Frequency (f)	Percentage (%)
Poor	15	41,7%
Fair	14	38,9%
Good	7	19,4%
Total	36	100%

Source: Primary Data, 2025

Based on Table 6, it was found that respondents with poor knowledge were 15 respondents (41.7%), those with fair knowledge were 14 respondents (38.9%), and those with good knowledge were 7 respondents (19.4%).

B. Analisa Bivariat

1. The Relationship Between Mother's Education and the Incidence of Acute Respiratory Infection (ARI)

Table 7. The Relationship Between Mother's Education and the Incidence of ARI

Mother's Education	Incidence of Acute Respiratory Infection (ARI)						P-*value*
	No		Yes		Total		
	f	%	f	%	N	%	
Low (Elementary–Junior High School)	1	5%	19	95%	20	100%	0,021
Low (Elementary–Junior High School)	6	37,5%	10	62,5%	16	100%	
Total	7	19,4%	29	80,6%	36	100%	

Source: Primary Data, 2025

Based on Table 7, it was found that among 20 respondents with low maternal education, 19 respondents (95%) experienced Acute Respiratory Infection (ARI), while 1 respondent (5%) with low maternal education did not experience ARI. The results of the chi-square test showed a p-value of 0.021 (<0.05), indicating a significant relationship between ARI incidence and maternal education.

This finding is consistent with the study conducted by Febrianti (2020), which showed that 53.3% of mothers had a low level of education. The chi-square test revealed a p-value of 0.004, indicating a significant relationship between maternal education and ARI incidence among toddlers (Febrianti, 2020).

It is also supported by another study conducted by Suhada, Novianus, and Wilti (2023), which found a significant relationship between maternal education and ARI incidence, with a p-value of 0.000 (Suhada, Novianus, & Wilti, 2023).

This study also aligns with research findings showing that among 31 respondents (48.8%) without ARI, 12 respondents (38.7%) had low education levels, while 19 respondents (61.3%) had higher education levels. Meanwhile, among 33 respondents (51.5%) with ARI, 21 respondents (63.6%) had low education levels, and 12 respondents (36.4%) had higher education levels. The chi-square test yielded a significance level of p = 0.046 (<0.05), meaning Ha was accepted and Ho was rejected, indicating a significant relationship between education and ARI incidence in the working area of Kedongdong Public Health Center in 2024. The odds ratio (OR) value of 0.131 suggests that respondents with low education levels are 0.131 times more likely to experience ARI compared to those with higher education levels (Aftika, Rukmana, & Maritasari, 2025)..

2. The Relationship Beetween Exclusive Breastfeeding History and the Incidence of Acute Respiratory Infection (ARI)

Tabel 8. Hubungan Riwayat ASI Ekslusif dengan Kejadian ISPA

Exclusive Breastfeeding History	Incidence of Acute Respiratory Infection (ARI)						P*value*
	No		Yes		Total		
	f	%	F	%	N	%	
lo	2	8,3%	22	91,7%	24	100%	0,029
Yes	5	41,7%	7	58,3%	12	100%	
Total	7	19,4%	29	80,6%	36	100%	

Source: Primary Data, 2025

Based on Table 8, it was found that among 24 respondents who were not given exclusive breastfeeding, 22 respondents (91.7%) experienced Acute Respiratory Infection (ARI), while 2 respondents (8.3%) who were not given exclusive breastfeeding did not experience ARI. The results of the chi-square test showed a p-value of 0.029 (<0.05), indicating a significant relationship between the incidence of ARI and exclusive breastfeeding history.

This finding is consistent with a previous study that obtained a chi-square p-value of 0.005, which is less than 0.05. Thus, it can be concluded that there is a significant relationship between exclusive breastfeeding history and the incidence of acute respiratory infection (ARI) among toddlers at the Junrejo Public Health Center in Batu City (Walfi, 2020).

Similarly, a study by Badriya, Ichwansyah, and Andria (2023) found a chi-square p-value of 0.000, indicating a significant relationship between exclusive breastfeeding history and the incidence of acute respiratory infection among toddlers (Badriya, Ichwansyah, & Andria, 2023).

3. The Relationship Beetween Low Birth Weight (LBW) History and the Incidende of Acute Respiratory Infection (ARI)

Table 9. The Relationship Between Low Birth Weight (LBW) History and the Incidence of ARI

Low Birth Weight (LBW) History	Incidende of Acute Respiratory Infection (ARI)						P*value*
	No		Yes		Total		
	f	%	f	%	N	%	
No	5	50%	5	50%	10	100%	0,010
Yes	2	7,7%	24	92,3%	26	100%	
Total	7	19,4%	29	80,6%	36	100%	

Source: Primary Data, 2025

Based on Table 9, it was found that among 26 respondents with a history of low birth weight (LBW), 24 respondents (92.3%) experienced Acute Respiratory Infection (ARI), while 2 respondents (7.7%) with a history of LBW did not experience ARI. The results of the chi-square test showed a p-value of 0.010 (<0.05), indicating a significant relationship between the incidence of ARI and LBW history.

This finding is consistent with the study by Syahrir et al. (2021), which obtained a chi-square p-value of 0.008, indicating a significant relationship between low birth weight and the history of ARI among infants in Ballaparang Village, Rappocini District, Makassar City in 2021. Similarly, a study by Wulandari et al. (2023) reported a chi-square p-value of 0.004, showing a significant association between LBW and the risk of ARI among children under five, with a prevalence ratio (PR) of 1.758 (95% CI = 1.370–2.254)..

4. The Relationship Beetween Immunization Status and the Incidence of Acute Respiratory Infection (ARI)

Table 10. The Relationship Beetween Immunization Status and the Incidence of Acute Respiratory Infection (ARI)

Immunization Status	Incidence of Acute Respiratory Infection (ARI)				Total		P*value*
	Tidak		Iya				
	f	%	f	%	N	%	
Not Completed	1	5,3%	18	94,7%	19	100%	0,037
Completed	6	35,3%	11	64,7%	17	100%	
Total	7	19,4%	29	80,6%	36	100%	

Source: Primary Data, 2025

Based on Table 10, it was found that among 19 respondents with incomplete immunization, 18 respondents (94.7%) experienced Acute Respiratory Infection (ARI), while 1 respondent (5.3%) with incomplete immunization did not experience ARI. The results of the chi-square test showed a p-value of 0.037 (<0.05), indicating a significant relationship between the incidence of ARI and immunization status.

This finding is consistent with the study conducted by Khairunisa (2021), which obtained a chi-square test result with a p-value of 0.029 < α (0.05). Statistically, this indicates that immunization status has a crucial influence on the incidence of ARI among toddlers at Sultan Agung Islamic Hospital, Semarang. Another study also reported a chi-square test result with a p-value of 0.000 (<0.05), showing a significant relationship between immunization status and the incidence of ARI (Suhada, Novianus, & Wilti, 2022).

Immunization is one of the key strategies to prevent infectious diseases, particularly those known as Vaccine-Preventable Diseases (VPDs). This is achieved by introducing bacterial or viral antigens either inactivated or attenuated into the body to stimulate the immune system to produce antibodies. These antibodies enhance or induce immunity, thereby preventing or reducing the transmission of VPDs (Ministry of Health of the Republic of Indonesia, 2016).

5. The Relationship Between Mother's Knowledge and the Incidence of Acute Respiratory Infection (ARI)

Table 11. The Relationship Between Mother's Knowledge and the Incidence of ARI

Mother's Knowledge	Incidence of ARI				Total		P*value*
	No		Yes		N	%	
	f	%	f	%			
Poor	1	6,7%	14	93,3%	15	100%	
Fair	2	14,3%	12	85,7%	14	100%	0,017
Good	4	57,1%	3	42,9%	7	100%	
Total	7	19,4%	29	80,6%	36	100%	

Source: Primary Data, 2025

Based on Table 11, it was found that among 15 respondents with poor maternal knowledge, 14 respondents (93.3%) experienced Acute Respiratory Infection (ARI), while 1 respondent (6.7%) with poor maternal knowledge did not experience ARI. The results of the chi-square test showed a p-value of 0.017 (<0.05), indicating a significant relationship between the incidence of ARI and mothers' knowledge.

This finding is consistent with the study conducted by Badriya, Ichwansyah, and Andria (2023), which reported a chi-square test result with a p-value of 0.000, showing a significant relationship between maternal knowledge and the incidence of ARI among toddlers in the working area of Tangan-Tangan Public Health Center, Aceh Barat Daya Regency.

Parental knowledge is closely related to the management of acute respiratory infections, as knowledge or cognition is a crucial domain in shaping an individual's behavior and actions (Karundeng et al., 2019).

CONCLUSION

Based on the results and discussion, it can be concluded that there is a significant relationship between maternal education, exclusive breastfeeding history, low birth weight (LBW) history, immunization status, and maternal knowledge with the incidence of Acute Respiratory Infection (ARI) among toddlers.

It is therefore recommended that midwives (PMB) strengthen health promotion efforts to prevent ARI in toddlers. One effective approach is to increase educational outreach on ARI prevention, particularly emphasizing the importance of complete immunization, exclusive breastfeeding, and early recognition of ARI symptoms so that timely treatment can be provided. Mothers should also be encouraged to complete their children's immunizations according to schedule and provide exclusive breastfeeding for the first six months. By enhancing maternal knowledge, mothers of toddlers will be better equipped to carry out both preventive measures and early management if their child shows symptoms of ARI.

REFERENCES

Aftika, L., Rukmana, N. M., & Metasari, D. Y. (2025). Hubungan Tingkat Pengetahuan dan Pendidikan Ibu Dengan Kejadian ISPA Pada Pasien Balita Yang Berobat Di Puskesmas Kedongdong. Jurnal Medika Malahayati Vol 9(1).

Akbar, M., Andriani, D., & Sari, R. P. (2020). Tumbuh Kembang Anak Balita. Yogyakarta: Deepublish.

Angelina, R. (2022). Pencegahan ISPA Pada Anak Usia Dini Melalui Peran Orang Tua. Jakarta: Pustaka Kesehatan Anak.

Badriya, C., Ichwansyah, F., & Andria, D. (2023). Faktor-faktor Yang Berhubungan Dengan Kejadia ISPA Pada Balita Di Wilayah Kerja Puskesmas Tangan-Tangan Kabupaten Aceh Barat Daya. Jurnal Kesehatan Tambusai. Vol 4 (4) Desember 2023.

Eldridge, C. (2020). *The Emotional And Economic Burden Of Recurrent Respiratory Infections In Children. Pediatric Health Journal*.

Febrianti, A. (2020). Pengetahuan, Sikap Dan Pendidikan Ibu Dengan Kejadian ISPA Pada Balita di Puskesmas 7 Ulu Kota Palembang.

Karundeng, Y. M., Runtu, L. G., & Mokoginta, T. (2019). Hubungan Pengetahuan Dan Perilaku Merokok Anggota Keluarga Dengan Kejadian ISPA di Desa Basaan 1, Wilayah Kerja Puskesmas Kecamatan Ratatotok.

Kementerian Kesehatan Republik Indonesia. (2017). Profil Kesehatan Indonesia tahun 2017. Jakarta: Kementerian Kesehatan RI.

Kementerian Kesehatan Republik Indonesia. (2016). Profil Data Kesehatan Tahun 2016. Jakarta: Kementerian Kesehatan RI.

Khairunisa, P. J. (2021). Faktor-Faktor Yang Mempengaruhi Kejadian ISPA Pada Balita Di Rumah Sakit Islam Sultan Agung Semarang Tahun 2019.

Notoatmodjo, S. (2018). Metodologi penelitian kesehatan. Jakarta: Rineka Cipta.

Nursalam. (2020). Metodologi Penelitian Ilmu Keperawatan: Pendekatan praktis (5th ed.). Salemba Medika.

Sandro. (2023). Laporan tahunan Dinas Kesehatan Kabupaten Tangerang Tentang Kasus ISPA Pada Balita Tahun 2021–2022. Dinas Kesehatan Kabupaten Tangerang.

SKI (2023). Survei Kesehatan Indonesia 2023: Prevalensi ISPA Pada Balita di Indonesia dan Provinsi Banten. Kementerian Kesehatan Republik Indonesia.

Sugiyono. (2018). Metode Penelitian Kuantitatif, Kualitatif, dan R & D. Bandung: Alfabeta.

Suhada, S. B. N., Novianus, C., dan wilti, I. R. (2023). Faktor-faktor Yang Berhubungan Dengan Kejadian ISPA Pada Balita di Puskesmas Cikupa Kabupaten Tangerang Tahun 2022. *Environmental Occupational Health And Safety Journal*. Vol 3(1).

Sunarni, S. (2017). Faktor Risiko Kejadian ISPA Pada Balita. Jurnal Kesehatan Masyarakat.

Syahrir, dkk. (2021). Hubungan BBLR, Kebiasaan Merokok Keluarga dan Status Gizi dengan Riwayat ISPA Bayi di Kelurahan Ballaparang. Al Gizzai: *Public Health Nutrition Journal* 1(1).

Triola, A., Handayani, S., & Wulandari, D. (2022). Penyakit ISPA Pada Anak dan Penanganannya. Surabaya: CV. Medika Media.

Walfi, MF. (2020). Hubungan Riwayat Pemberian ASI Ekslusif Dengan Kejadian Insfeksi Saluran Pernapassan Akut Pada Balita Di Puskesmas Junrejo Korta Batu 2020.

Widianti, N. (2020). Laporan Situasi ISPA Global Menurut WHO Tahun 2020. World Health Organization.

Wulandari, dkk. (2023). Hubungan Riwayat BBLR, Kelengkapan Imunisasi Dan Perilaku Merokok Anggota Keluarga Terhadap Risiko ISPA Pada Balita Di Wilayah Kerja Puskesmas Meukek. JKM ITEKES Cendekia Utama Kudus Vol 11 (3). Desember 2023.

Yuditya, R.., & Mulyono, S. (2019). Infeksi Saluran Pernapasan Akut (ISPA). Yogyakarta: Nuha Medika.